

# RATCHET TOOL

## FIELD OF THE INVENTION

The present invention relates to a ratchet tool with simple structure and the tool is easily to be assembled.

## BACKGROUND OF THE INVENTION

A conventional ratchet tool generally includes a ring-shaped head with a recess defined in an inner periphery of the head so as to receive a ratchet mechanism therein. The ratchet mechanism includes many parts and most of the parts have complicated shape. It takes a lot of time to assemble the ratchet tool and the head is required to have a large space to receive the mechanism so that the thickness of the head could be too large to be operated in a narrow space. Besides, most of the conventional ratchet tools do not expect to output large torque so that they are not necessarily to be equipped with complicated ratchet mechanism. The market needs a simple ratchet tool that is cheap and has limited functions.

The present invention intends to provide a ratchet tool that has simple structure and few parts.

## SUMMARY OF THE INVENTION

In accordance with one aspect of the present invention, there is provided a ratchet tool and comprising a ring-shaped head with a toothed member rotatably received therein and a handle has a first end pivotally inserted in the ring-shaped head. A pawl is connected to the first end of the handle and pivotally engaged with the toothed member.

The primary object of the present invention is to provide a ratchet tool that has a handle pivotally connected to the ring-shaped head so as to pivot a pawl to engage with a toothed member in the ring-shaped head.

These and further objects, features and advantages of the present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, several embodiments in accordance with the present invention.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 is an exploded view to show a ratchet tool of the present invention;

Fig. 2 is a plan view to show the handle is located in a neutral position relative to the head;

Fig. 3 is a plan view to show the handle is pivoted to a side to pivot the pawl to engage with the toothed member in the head of the ratchet tool;

Fig. 4 is a plan view to show the handle is pivoted to the other side to pivot the pawl to engage with the toothed member in the head of the ratchet tool;

Fig. 5 is an exploded view to show another embodiment of the ratchet tool of the present invention;

Fig. 6 is an exploded view to show yet another embodiment of the ratchet tool of the present invention;

Fig. 7 is a plan view to show the handle is located in a neutral position relative to the head of the tool as illustrated in Fig. 6;

Fig. 8 is a plan view to show the handle is pivoted to a side to pivot the pawl to engage with the toothed member in the head of the ratchet tool as illustrated Fig. 6, and

Fig. 9 is a plan view to show the handle is pivoted to the other side to pivot the pawl to engage with the toothed member in the head of the ratchet tool as shown in Fig. 6.

### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

Referring to Figs. 1 and 2, the ratchet tool of the present invention comprises a ring-shaped head 10 having a toothed member 20 rotatably received therein and the ring-shaped head 10 has an opening defined radially therein. A first end of a handle 30 is pivotally inserted in the opening of the ring-shaped head 10 by a pin 32. Two passages 12 are defined through the ring-shaped head 10 so as to receive two springs 11 therein. Two bolts 13 are threadedly engaged with the two passages 12 to retain the springs 11 in the passages 12. The two springs 11 contact two sides of the first end of the handle 30. A recess 31 is defined in the first end of the handle 30 so as to receive a pawl 40 therein. The pawl member 40 has two groups of teeth 41 defined in a first side thereof so as to be respectively engaged with the toothed member 20. A second side of the pawl 40 has a protrusion 42 extending from a second side of the pawl 40 so as to be engaged with the recess 31. A flexible plate 43 extends from the first side of the pawl 40 and contacts the toothed member 20.

The two springs 11 keep the handle 30 to be located at a neutral position relative to the head 10 and the tension of the springs 11 can be easily adjusted by rotating the two bolts 13.

Referring to Figs. 3 and 4, the handle 30 can be pivoted about the pin 32 so  
5 pivot the pawl 40 so as to let one group of teeth 41 be engaged with the toothed member 20. By this way to achieve the ratchet function. The flexible plate 43 moves over the teeth of the toothed member 20 to have "click" sound when rotating the handle 30 while the toothed member 20 is remained still.

Figure 5 shows that the ring-shaped head 10 has two notches 14 defined in  
10 two opposite insides of the opening thereof so as to receive the two springs 11 therein. The ring-shaped head 10 is assembled by two halves by rivets 15.

Figure 6 shows that the pawl 40 as illustrated in Fig. 1 can be made with  
the handle 30 as a one-piece member. In other words, the first end of the handle 30 has two protrusion portions and each of which has teeth 410 for being engaged with  
15 the toothed member 20. Figures 7 to 9 shows the handle 30 as shown in Fig. 6 is pivoted to its three positions when operating the ratchet tool.

The ratchet tool of the present invention comprises only few parts and is easily to be assembled.

While we have shown and described various embodiments in accordance  
20 with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.